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ABSTRACT

The usefulness of before-adjunct questions with standardized multiple-choice tests in increasing reading comprehension scores was studied by examining the relative effectiveness of reading test questions first or reading the passage first. Subjects were 210 fourth graders randomly assigned to two treatment groups. The Level 9 Reading Comprehension subtest of the Iowa Tests of Basic Skills (Form 8) was administered. In each school included in the study, one classroom was randomly assigned the passage first treatment, and the other classroom was randomly assigned the question first treatment. There was a slight trend indicating that those who read the questions first outperformed the others on literal comprehension items, but the results were not conclusive. It would not be appropriate to generalize these results to other grade and ability levels. Although much time and money is spent teaching test-taking skills, it is not always clear what practices are helpful. Lower-achieving students might do better in generalization skills when they have some questions to guide them. Seven tables present the data. (SLD)

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SHOULD THEY READ THE QUESTIONS FIRST?
A COMPARISON OF TWO TEST-TAKING STRATEGIES FOR ELEMENTARY STUDENTS

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Introduction

"The directions tell us to read the passage first. But we'll work through the example in a different way. We're going to look at the question first and then look at the passage ...."

The above quotation comes from a commercial test preparation booklet (Random House Scoring High) used in many elementary schools to increase students' reading comprehension test scores. This publisher and others advocate reading test questions prior to reading the passage when taking multiple-choice comprehension tests. Many authors of test preparation packages, however, do not agree. In fact, virtually all standardized test directions advise examinees to first read the passage and then answer the questions. One of the reasons given in support of this position is that reading the question first is only helpful in answering factual questions and is an obstacle in responding to inference-type questions.

In Becoming a Nation of Readers: Implications for Teachers, provision for appropriate background activities to increase reading comprehension are stressed as a necessary and often-missing component of reading instruction. "(These activities) help students focus their attention on the important aspects of their reading." Questions that highlight the passage theme are suggested for these prereading activities (U. S. Department of Education, OERI, 1986).

A review of the literature on advance organizers and adjunct questioning revealed very few studies that were done with elementary school students and none which specifically examined the effect on reading comprehension scores of reading the question or the passage first. Instead these techniques have been studied as they impact on classroom instruction and learning. The research findings do indicate, however, that when questions about the content of a text are posed, either before or within a passage, readers recall more of the content than when no questions are asked (Sundbye, 1987, p. 85). There seem to be mitigating circumstances affecting their usefulness. In general, the use of prepassage adjunct questions increase students' performance on the same or similar questions presented after reading the material (Anderson & Biddle, 1975, p. 91; Andre, 1987, p. 81). Differential effects have also been observed for lower-level and higher-order questions and for learners of differing abilities (Anderson & Biddle, 1975, p. 101; Andre, 1987, p. 58, 82; Risko & Alvarez, 1986, p. 312; Wilhite, 1984, p. 41).

Purpose

The research lends tentative support to reading test questions before reading the associated passage on multiple-choice exams since this is a direct extension of the use of before adjunct questions with the same or similar criterion test items. Given the press to increase students' reading comprehension scores, the amount of time and money invested in testwiseness materials, the conflicting directions taught in test preparation packages, and the scarcity of research in this area, this study is intended to

determine the usefulness of before adjunct questions with standardized multiple-choice tests. This study examines the relative effectiveness of each practice (reading the question first or reading the passage first) for increasing students' reading comprehension scores.

Subjects

The subjects were 288 fourth grade students in two classrooms in each of 5 urban schools. Excluding one classroom that received nonstandard treatment, fifth graders who were enrolled in the rooms tested, and students who had no pretest scores, the effective sample size was 210. The schools were chosen to provide students with a wide range in achievement levels as measured by the Iowa Tests of Basic Skills (Form 7) that was administered as part of the citywide testing program. Within each school, one classroom was randomly assigned to each of two treatment groups.

Method

Each student was given a 60-minute training session on test-taking strategies. The lessons focused on teaching students to look for key words in questions and either advising students to read test questions before or after reading the associated passage and were similar to those found in commercially available test preparation packages. The lessons were taught by three teacher certificated members of the school system's research department; the students' teacher remained in the classroom during each lesson. After the lesson, the students were given an assignment that involved practicing the strategies that they were taught. The classroom teachers went over the homework assignment in class the next day and on the day after that, the researcher returned, reviewed part of the homework assignment with the class, and administered the Level 9 Reading Comprehension subtest of the Iowa Tests of Basic Skills (Form 8). In each school, one classroom was randomly assigned the passage first treatment and the other the question first treatment. The same researcher worked with both classrooms in a given school on the same day. Order of presentation of the treatments was counterbalanced across schools.

Results

An analysis of covariance was performed using the SAS general linear models procedure. Means and standard deviations for the independent variable (ITBS Form 8 Reading Comprehension grade-equivalent) and covariate (ITBS Form 7 Reading Comprehension grade-equivalent) are given in Table 1 and adjusted means are given in Table 2. Means and standard deviations are given both for the entire sample, which includes both students whose pretest was the

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Insert Tables 1 and 2 about here

Level 8 and Level 9 ITBS and for a restricted sample who took the Level 9 pretest and posttest. Some of the analyses that will be discussed deal with changes in performance on specific subskills, the assessment of which requires that the students take the same level pretest and posttest.

Results of the analysis of covariance for the entire sample are given in Table 3. There was no significant treatment effect, no difference in the

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Insert Table 3 about here

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grade-equivalent scores of students who had been instructed to read the passages first as compared with those who had been taught to read the questions first.

In order to examine the possible differential effects of the two test-taking strategies on the various types of items included on the ITBS, a follow-up analysis (or what might be viewed as a fishing trip) was performed on those Ss who took the Level 9 pretest and posttest. The results of the ANCOVA for that group, presented in Table 4, were not significant. Further analyses

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Insert Table 4 about here

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were conducted on the percent correct on three subsets of items on the Reading Comprehension: facts (literal comprehension), inferences and generalizations (see Tables 5-7). The ANCOVAs for fact and inference

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Insert Tables 5-7 about here

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items were not significant, although the treatment effect for fact items approached significance ($F_{1,95} = 3.75$, $F_{crit} = 3.84$), with the questions first group scoring higher. The ANCOVA for generalization items was discarded when it was found that the hypothesis of homogeneity of regression slopes was violated. Or to put it another way, there was a significant aptitude-treatment interaction. Higher ability students tended to do better on generalization items in the passage first condition, while lower ability students did worse.

Discussion

The results were hardly conclusive. There seemed to be a slight trend that indicated that the questions first group outperformed the others on the literal comprehension items. Perhaps the effect might have been stronger

if, like the training materials, the ITBS had only one question following each passage, and not several. The significant aptitude-treatment interaction for the generalization items indicates that testwiseness instruction emphasizing reading the questions first might actually penalize some higher-ability students. Perhaps the lower-achieving students tend to do better in generalization skills when they have some questions to guide their reading--the kinds of questions that appear in basal readers and may help them focus on what they should be looking for in the reading passage.

That the students who took part in this study had average reading scores below the national average, may have influenced the results, although when the data were reanalyzed to exclude students with stanine scores below five on the pretest, the ANCOVAs were not significant.

It is also not clear whether the same results would have been obtained using a lengthier test preparation program taught by the students' own teacher. It also would not be appropriate to generalize these results to other grade and ability levels.

Considerable time and money is spent on teaching students test-taking skills, although it is not firmly established what practices, if any, are really helpful. Some further research, preferably in the form of randomized experiments, would certainly be welcome.

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Table 1

Mean Scores (Unadjusted) and Standard Deviations
for Students Reading Questions First and Passage First

	Questions First					Passage First				
		Pretest		Posttest			Pretest		Posttest	
	N	Mean	SD	Mean	SD	N	Mean	SD	Mean	SD
Grade-equiv. scores										
Levels 8 and 9	133	3.48	0.78	3.39	0.88	77	3.02	0.96	3.03	0.94
Level 9 only	131	3.50	0.76	3.40	0.87	67	3.14	0.94	3.15	0.89
Percent correct (Level 9 only)										
Facts	131	53.7	17.1	64.0	19.9	67	47.1	17.8	56.3	21.3
Inference	131	52.1	16.5	49.8	18.9	67	45.3	19.7	44.1	18.2
Generalizations	131	44.0	19.3	54.7	25.3	67	36.7	21.3	51.0	25.1

Table 2

Adjusted Mean Posttest Scores and Standard Errors
for Students Reading Questions First and Passage First

	Questions First			Passage First		
	N	Mean	SE	N	Mean	SE
Grade-equiv. scores						
Levels 8 and 9	133	3.27	0.06	77	3.26	0.08
Level 9 only	131	3.31	0.06	67	3.33	0.08
Percent correct (Level 9 only)						
Facts	131	62.5	1.4	67	60.1	2.0
Inference	131	48.7	1.4	67	46.8	2.0
Generalizations	131	53.9	2.0	67	54.6	2.9

TABLE 3

Analysis of Covariance Summary Table

Group: Level 8 and Level 9

Dependent variable: Reading R.E.

Source	SS	df	MS	F	p
treatment	.3038	1	.3038	.736	NS
error	85.4158	207	.4126	--	--

The correlation between the independent variable and the covariate is .72.

An F-test of the null hypothesis of homogeneity of within-group regression slopes was not significant ($F_{1,206} = .70$, $p = .4045$).

TABLE 4

Analysis of Covariance Summary Table

Group: Level 9 Only

Dependent variable: Reading R.E.

Source	SS	df	MS	F	p
treatment	.0137	1	.0137	.0350	--
error	76.4000	195	.3919		

The correlation between the independent variable and the covariate is .71.

An F-test of the null hypothesis of homogeneity of within-group regression slopes was not significant ($F_{1,194} = .06$, $p = .8026$).

TABLE 5

Analysis of Covariance Summary Table

Group: Level 9 Only

Dependent variable: Percent Correct on Fact Items

Source	SS	df	MS	F	p
treatment	.0958	1	.0958	3.75	.06
error	4.9816	195	.0255		

The correlation between the independent variable and the covariate is .64.

An F-test of the null hypothesis of homogeneity of within-group regression slopes was not significant ($F_{1,194} = 2.70$, $p = .1021$).

TABLE 6

Analysis of Covariance Summary Table

Group: Level 9 Only

Dependent variable: Percent Correct on Inference Items

Source	SS	df	MS	F	p
treatment	.0219	1	.0219	.834	--
error	5.1215	195	.0263	--	--

The correlation between the independent variable and the covariate is .51.

An F-test of the null hypothesis of homogeneity of within-group regression slopes was not significant ($F_{1,194} = .43$, $p = .5152$).

TABLE 7

Analysis of Covariance Summary Table

Group: Level 9 Only

Dependent variable: Percent Correct on Generalization Items

Source	SS	df	MS	F	p
treatment					
	Assumptions not met, see below				
error					

The correlation between the independent variable and the covariate is .26. - questions first group

The correlation between the independent variable and the covariate is .64. - passage first group

An F-test of the null hypothesis of homogeneity of within-group regression slopes was significant ($F_{1,194} = 5.84$, $p = .0166$).